REMARKS/ARGUMENTS

1.) Claim Amendments

The Applicants have amended claims 12 and 19. Accordingly, claims 1-22 are pending in the application. Favorable reconsideration of the application is respectfully requested in view of the foregoing amendments and the following remarks.

2.) Claim Rejections – 35 U.S.C. § 103(a)

The Examiner rejected claims 1-22 under 35 U.S.C. § 103(a) as being unpatentable over Liang, et al. (US 6,314,147) in view of Ariyavisitakual (US 5,946,351). The Applicants respectfully traverse the rejection. According to the Examiner, Liang discloses all of the elements of independent claims 1, 10 and 19-22 of the present application, except for pre-filtering the received signal using the initial channel taps to generate output channel taps and wherein the SNR is based on a ratio of energy in a first subset of the output channel taps to energy in a second subset of the output channel taps. According to the Examiner, Ariyavisitakual discloses this element.

Liang discloses a two-stage, space-time digital receiver that is said to provide improved estimates of data symbols from a received signal comprising the data symbols, co-channel interference, and intersymbol interference. The first stage uses a space-time linear filter to process the received signal and provide an intermediate signal with substantially reduced co-channel interference content and substantially unaltered intersymbol interference content relative to that of the received signal. The second stage uses a Viterbi equalizer to estimate the data symbols from the intermediate signal. A first embodiment of Liang's receiver is said to determine the weight coefficient matrix for the linear filter by applying MMSE criteria to the error between the intermediate signal and a reference signal derived from the convolution of known training symbols with a first set of estimated channel vectors. It is also said to derive a second set of estimated channel vectors from the intermediate signal for the Viterbi equalizer.

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Ariyavisitakual discloses a decision feedback equalizer receiver that assigns a number F of feedforward filter taps to optimize digital receiver performance in a multipath channel environment. The feedforward filter taps are assigned to delay times corresponding to an optimum burst timing parameter delay time, d(0), and to F-1 time delays based on "tap SNR indices." For an Uncorrelated Inter-Symbol-Interference (UISI) case, the F-1 time delays are the first F-1 rank ordered time delays are selected as the feedforward tap delay times. For a general case, a combination of the UISI case and an analytical two cluster case is said to be obtained by selecting the first F-2 rank ordered time delays and a 2D time delay, where D is the delay time corresponding to the largest estimated tap SNR index.

However, the invention of Ariyavisitakual is only applicable to an SISO channel. The feedforward filter in Ariyavisitakual is based on minimizing MSE (see column 4, line 48), not maximizing SNR. The reference to maximizing SNR in Ariyavisitakual (column 3, line 61 to column 4, line 15, equation 2) is only for the purposes of timing estimation or tap selection, not for filter design. Further, the filter in the first embodiment of Liang is designed to minimize MSE without affecting the inter-symbol interference (ISI). The filter in the second embodiment of Liang is designed to maximize SNR (or SINR) based on the energy in the filtered signal to the energy in the filtered noise (equation 15).

In contrast, the independent claims of the present application disclose a method and several apparatus that maximize SNR based on a ratio of the energy in a first subset of output channel taps to energy in a second subset of output channel taps. Thus, by definition, the filter in the independent claims of the present invention affects ISI, which does not occur in the first embodiment of Liang. Also, SNR in the independent claims of the present invention does not have the same meaning as in the second embodiment of Liang.   Because the combination of Liang and Ariyavisitakual do not disclose the present invention, the allowance of claims 1-22 is respectfully requested.

3.) **Prior Art Not Relied Upon**

In paragraph 4 of the Office Action, the Examiner stated that the prior art made of record and not relied upon is considered pertinent to the Applicants' disclosure. None

of the cited references, alone or in combination, disclose nor suggest the present invention.

CONCLUSION

In view of the foregoing remarks, the Applicants believe all of the claims currently pending in the Application to be in a condition for allowance. The Applicants, therefore, respectfully request that the Examiner withdraw all rejections and issue a Notice of Allowance for claims 1-22.

The Applicants request a telephonic interview if the Examiner has any questions or requires any additional information that would further or expedite the prosecution of the Application.

Respectfully submitted,

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